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# THE GREAT LAKES AND THE MODERN NAVY.

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THE report of the Commissioner of Navigation for 1897 contains the following statement: "The Great Lakes region, for the first time in our history, has built more tonnage than all the rest of the country. One hundred and twenty vessels of 116,937 tons, compared with 137 vessels of 115,296 tons for the rest of the United States." This statement is fraught with interest to those who are watching the progress of our merchant marine; and as this progress is intimately associated with the growth of the navy, it becomes an important question how far this industrial movement on the Great Lakes may be made an important factor in our naval policy.

The coast lines of the Great Lakes border upon nine States containing more than one-third of our population. The six large cities on this coast line will easily aggregate a population of three millions, and to this must be added hundreds of prosperous towns. Until within a few years agricultural products and lumber were the principal freights in the lake carrying traffic, but the recent discoveries of iron ore in the Lake Superior region have brought about an unparalleled commercial and maritime growth. This latter industry must necessarily prove far-reaching in its effects; for we are living in the age of steel, and whatever tends to place us abreast of our rivals in the production of steel tends at the same time to increase our prosperity, and to make us great among the nations of the earth.

Turning to the particular branch of the steel industry that is of the most importance to the navy, viz., ship building, a brief historical retrospect will show that, after years of exclusion, everything points to our again entering the contest for commercial supremacy on the ocean. In the transitory period from

wood to metal in ship construction, a period roughly estimated as extending from 1840 to 1880, the American flag practically disappeared from the high seas, while England, who had held for over two hundred years the first place as a ship-building and ship-owning power, still maintained her position. Finding her home supply of ship timber exhausted, she began to import it, and as this was necessarily incompatible with the maintenance of her supremacy, the next step was to take advantage of her increasing production of metals. The evolution of the iron ship and its successor, the steel ship, was the result. The last thirty-five years have witnessed the production of the English steam fleet, until now British steamers carry the freight and passengers of the greater part of the world. The British shipyards, too, can now undertake the construction of at least twenty battle-ships and more than twice this number of cruisers at the same time, a potential strength that adds immensely to the maintenance of her present sea power.

But England will in time be confronted with a new difficulty. The ores in that country are not suitable for steel making, and for some years past large quantities of ore have been imported from mines in the northern part of Spain. These mines are being rapidly exhausted. Four-fifths of the output goes to England, and it has been estimated that at the present rate ten years will exhaust the mines of the Biscay region. Of course there are other sources of supply, Sweden, for example; but they are not easily accessible, and cheapness of transportation is essential. The condition of affairs promises, therefore, to be very much the same, so far as materials go, as it was at that period when England passed from the use of wood to that of metal in building ships.

Let us now look at the condition of the steel industry in the United States. In 1892 there were put out 16,036,043 tons of iron ore, of which the Lake Superior region contributed 9,564,388 tons. The ore from the Great Lakes surpasses in richness the ores from any other part of the country. New discoveries are being constantly reported, and the deposits are so easily accessible as to make it possible to supply any demand. During the past ten years there has been an enormous development in this new industry in the Lake Superior region, until now the amount of capital invested in mining and transportation is esti-

mated at \$234,000,000. The rapid growth of this industry justifies the prediction that with access to the ocean by a practicable deep-water way we can not only balance our domestic iron and steel trade, but also compete in the foreign market. At present many iron and steel plants on the seaboard import foreign iron ores, as the low value of iron ore in proportion to its weight shuts out transportation by rail from the West. But with a deep water canal reaching from the Great Lakes to the ocean, the ores required by the manufacturers on the Atlantic seaboard could be supplied more cheaply than the foreign ores, thus increasing the field for capital and industry, while at the same time the iron and steel of the establishments on the Great Lakes could be shipped through by water without breaking bulk and seek the markets of the world.

This brings us to the subject of deep-water canals. For several years, while the national government has been busy with the projected Nicaraguan Canal, the people of the West, through private endeavor and public discussion, have been agitating the question of deep waterways from the Great Lakes to the seaboard. The International Deep Waterways Convention held a meeting at Cleveland, Ohio, September 24, 1895, and among the delegates were business men, capitalists, and civil engineers from the Lake States, and also from the Dominion of Canada. Through the efforts of this association the matter was brought before Congress by Senator William Vilas, of Wisconsin, who, on February 8, 1895, introduced a joint resolution authorizing a preliminary inquiry concerning deep waterways between the ocean and the Great Lakes. This resolution was incorporated in the Sundry Civil Appropriation Bill, and became a law on March 2, 1895. On November 4 the President, in conformity with its provisions, appointed three commissioners, James B. Angell, of Michigan, John E. Russell, of Massachusetts, and Lyman E. Cooley, of Illinois. Soon after this, the Dominion of Canada appointed a similar commission, and a joint meeting was held in January, 1896. The United States commission spent a year in thoroughly investigating the canal question, and submitted their report to the President January 8, 1897. In his letter transmitting the report to Congress, President Cleveland says :

“The advantages of a direct and unbroken water transportation of the products of our Western States and Territories from a convenient point of

shipment to our seaboard ports are plainly palpable. The report of the commissioners contains, in my opinion, a demonstration of the feasibility of securing such transportation, and gives ground for the anticipation that better and more uninterrupted commerce, through the plan suggested, between the Great West and foreign ports, with the increase of national prosperity which must follow in its train, will not long escape American enterprise and activity."

Meanwhile American "enterprise and activity" have been giving the world an object lesson in canal building. The Chicago Drainage Canal designed primarily to furnish an adequate system of drainage for the city of Chicago, but containing all the features of a ship canal, is a municipal undertaking that is particularly valuable in showing the immense improvement in excavating machines and the resultant low cost of canal building. The main drainage channel extends from the west fork of the south branch of the Chicago River southwest to Lockport, a distance of about 29 miles. The width at the top is from 162 feet to 300 feet, and at the bottom from 160 feet to 200 feet. The depth of water varies from 23 feet to 26 feet. According to present estimates, it will cost \$27,303,216. A statement has been made that the work of excavation will be carried out for less than half the cost of similar work on the Manchester ship canal, the dimensions of which are, length, 30½ miles; width at top, 172 feet; width at bottom, 120 feet; depth, 26 feet.

President Cleveland's prediction, therefore, that the feasibility of deep water transportation from the Great Lakes to the ocean will not long escape American enterprise, bids fair to be realized. If the City of Chicago can demonstrate practically that deep water canal building has been brought within the bounds of reasonable cost, the general government must, in response to urgent appeals from a large section of the country interested, soon pass beyond the stage of preliminary investigation to that of definite action. Thus far the question of cost has not been thoroughly dealt with, but valuable data have been collected. Among the more important conclusions reached by the United States Deep Waterways Commission are the following :

1. That it is entirely feasible to construct such canals and develop such channels as will give 28 feet of water from the Great Lakes to the seaboard.

2. That, starting from the heads of Lakes Michigan and Su-

terior, the most eligible route is through the several Great Lakes and their intermediate channels and the proposed Niagara Ship Canal (Tonawanda to Olcott) to Lake Ontario. From Lake Ontario the Canadian seaboard can be reached by the way of the St. Lawrence River, while the American seaboard can be reached by way of the St. Lawrence River, Lake Champlain, and the Hudson River, or by way of the Oswego-Oneida-Mohawk Valley route and the Hudson River.

3. That while our policy of canal building should contemplate the ultimate development of the largest useful capacity, and all work should be planned on that basis, at the same time it is practicable to develop the work in separate sections, each step having its economic justification. The Niagara Ship Canal should first be undertaken, and incidentally the broadening and deepening of the intermediate channels of the lakes.

Such then is a brief résumé of this important industrial movement and its collateral engineering undertakings. From a military point of view, a series of canals entirely within the limits of the United States could be more readily defended. But the advantages of following, as far as possible, the natural waterways will at first probably outweigh the question of defense. If the lake coast line of over 3,000 miles is brought into deep-water connection with the Atlantic seaboard, its permanent defense will be a question for the Army. On the other hand, if permanent arbitration is to be depended upon as a warrant for following natural commercial routes without any thought of ultimate defense, the international character of parts of the work and the riparian interests involved will make the readjustment of the existing treaty relations a question for our statesmen.

Coming now to the direct interests of the Navy in this politico-economic question, it will be found that under existing conditions there is little hope of any immediate addition from this new source to our war vessel tonnage. The Rush-Bagot Convention of 1817, entered into by the United States and Great Britain, provides that the naval forces to be maintained on the Great Lakes shall be confined on each side to one vessel on Lake Ontario, one vessel on Lake Champlain and two vessels on the Upper Lakes. These vessels are limited to one hundred tons burden and an armament of one eighteen-pounder cannon each. This treaty has not taken the shape of a formal international

treaty, but has been practically accepted as binding by both countries for a period of three-quarters of a century. Its stipulations have twice during its history been notably disregarded, once by each country, but only on occasions of serious public emergency. In view of the great progress made in ship building and marine engineering, it is not strange that there has been an evasion of the spirit of these antique stipulations, if not a direct violation of the letter of the law. The U. S. S. "Michigan," now in service on the Upper Lakes, is of 685 tons displacement, has a main battery of four six-pounder guns. In the building up of the New Navy, some of the ship builders on the Great Lakes, whose energy and enterprise had gone so far as to build whale-backs that were towed through the canals in sections and put together at Montreal, began to inquire whether these methods would not be extended to war vessels. In 1890 F. W. Wheeler & Company, of West Bay City, Michigan, were the lowest bidders for the construction of an armored cruiser, one protected cruiser, and a practice ship. In 1895, the Detroit Dry Dock Company proposed the construction of parts of vessels of war. Both of these bids were rejected by the Navy Department as being in violation of the Rush-Bagot agreement. The clause of the agreement which was adjudged to prohibit such construction is as follows: "All other armored vessels (besides those authorized to be retained) on these lakes shall be forthwith dismantled, *and no other vessels of war shall be there built or armed.*" On account of this decision, the activity in ship building for government purposes has been confined, on the Great Lakes, to revenue cutters and light ships. The Mississippi Valley, unhampered by these restrictions, has built one torpedo-boat, the "Ericsson."

Although vessels of war cannot be built on the Great Lakes, the building there of merchant vessels that by means of the projected canals will be able to reach the seaboard will have an indirect bearing on the future of the navy. Captain Mahan and other writers have pointed out that we have practically reversed the natural order of things in building vessels of war before building up the merchant marine. For more than twenty years the government has been a steady customer of the ship builders on the Atlantic and Pacific coasts. As a result ship building plants have been improved, workmen have been trained, and contributory industries have been developed. But it is claimed by these

builders that the patronage of the government is a temporary help only and that the demands of our coastwise trade are insufficient to promote ship building on a large scale. The main demand for ships must be created by an extensive foreign trade carried on in American bottoms. It has been demonstrated that the economic changes which will be brought about by a deep-water route from the Great Lakes to the seaboard will enable us to compete with England in the ocean-carrying trade. Since the Civil War all our energies have been directed toward purely domestic development, and capital has sought investments in the extension of railways, the settlement of new territory, and the industrial regeneration of the South. The events of the past few years force us to look beyond the limits of our own shores, and our diplomacy has made the Monroe doctrine something more than a rhetorical declaration. If we boldly aspire to commercial and political supremacy in the western hemisphere, and to the creation of a foreign carrying trade, we must admit the absolute necessity for a steadily increasing navy.

The canal-builders and the shipbuilders of the Great Lakes have shown that, if they are accorded the proper encouragement by the national government, the country may rest satisfied with its resources for establishing a foreign commerce carried in domestic bottoms and to provide naval war material to protect it. Behind these industrial leaders stand, as has been said before, more than one-third of the entire population of the United States. Nothing can be more gratifying to the navy than the growth of a sentiment favorable to it in a region that a few years ago was most apathetic. To-day the citizens of the middle West show a lively interest in naval affairs, and are taking a prominent part in naval militia work. Chicago, Saginaw, Detroit, Toledo, Cleveland, and Rochester have large, flourishing naval militia organizations. The Detroit organization recently took the old "Yantic" from Montreal to Detroit without either State or national aid. In Rochester the boat reconnoissance work on Lake Ontario performed by the local organization has received well-merited praise from the War College. These are only two instances, but they show the existence of a patriotic spirit that ought to be fostered and directed to the proper ends. Here is a new field for recruiting the naval *personnel*.

There is a vague idea among many naval officers that we



really possess a strong naval reserve in our seafaring population. Careful investigation will prove that this is not a fact. In the merchant marine and deep-sea fisheries from 50 per cent. to 70 per cent. of the men are foreigners, and the number of men available, even if they all enlisted, which of course would be impossible, would not serve to put the navy on a war footing. The Naval War College has been investigating the various phases that war on our coast might assume, and has found that we shall need a great number of officers, in addition to those of the regular navy. Where are these additional officers to come from? The sources from which they were obtained in 1861 no longer exist, for our deep-sea merchant shipping has practically disappeared. Captain Taylor, of the War College, has given the following brief summary of the present condition of affairs:

" . . . The same conditions do not exist now as did during the Rebellion. That war, especially on the part of the navy, was offensive and attacked an enemy upon its own coast, and required a large number of deep-sea ships and deep-sea officers.

" The wars for which we must plan, at least for the next few years, are defensive for our part, and to be waged against enemies probably superior to us on the sea. This throws upon us as a principal *role* the defence of our coast and the supplementing of our small seagoing navy by a formidable flotilla of small craft, which, when thoroughly organized and drilled, shall dominate our channels, sounds, and bays, and make their comfortable or permanent occupation by hostile fleets an impossibility."

Our small sea-going navy is now manifestly undermanned. As additions are made to its *material* the deficiency in *personnel* is partly made up by stop-gap legislation—always an unsatisfactory process. As a business proposition there has been among our legislators a desire to build up an adequate navy, but as a purely naval undertaking there has always been opposition to providing the necessary *personnel*. England is now going through an interesting experience, of which we may well take heed. For the past ten years the naval policy of that country has tended towards maintaining in time of peace a *personnel* that is practically on a war footing. The objection to this policy has been that it involves an immense expenditure in pay, provisions, and pensions, besides the maintenance of ships to give the necessary instruction at sea. The alternative has been to develop the efficiency of the Naval Reserve. But here the supporters of such a plan have met with the same difficulties that beset us, *i. e.* the merchant marine, which ought to be the

chief source of supply of the Naval Reserve, is becoming honey-combed with foreigners. Reliable calculations show that the number of foreigners in British ships has increased  $22\frac{3}{10}$  per cent. in eight years. Poor wages and the natural discomforts of sea life have caused men of British birth to seek employment as skilled workers ashore.

But the United States has one advantage over England. The latter, in inspecting the source of supply for the Naval Reserve, has turned to her widely scattered colonies, and reasonably expects that in time of war they will contribute their share of men. The United States has no colonies, but its peculiar system of federal government permits it to rely, in a measure, upon the States to organize and maintain volunteers for national defence, although until recently the system has been applied almost exclusively to recruiting the land forces. Ten years ago an unsuccessful attempt was made in Congress to create a naval reserve of officers and men from the merchant marine. Several States bordering upon the seacoast then made the matter a local issue, and what were called "naval battalions to be attached to the volunteer militia" was the result. With the Great Lakes brought into deep-water communication with the Mississippi and the Atlantic seaboard a cordon of coast line States will be formed whose similarity of interests will greatly increase the source from which the country can draw for that second line of defence required in time of war to "dominate our channels, sounds, and bays." Barred by the Rocky Mountains, the Pacific coast stands apart from any immediate benefits from interior water-way improvements, but the building of an isthmian canal will bring into closer relations with the other maritime States kindred interests that have already produced such excellent shipbuilders and such skilled seamen.

To those who doubt the possibility of recruiting inland men for general service in the navy, and who question the ultimate efficiency of the men thus recruited, it is only necessary to point out that last summer the Bureau of Navigation established recruiting stations on the Great Lakes, during the busiest part of the navigation season, and from more than five hundred applications enlisted three hundred men — seamen and mechanics. These men, according to the reports from the officers of ships to which they have been assigned, are all of very high standard.

They are self-respecting Americans. This in itself is a great gain. After recruiting the general service to three-quarters of its full war strength, which can be done as occasion demands, by the enlistment of seamen and mechanics, and by fostering the apprentice system, a naval reserve will have to be depended upon to supply the remaining fourth, and to make up the wastage of war. This is the English estimate, and it is apparently sound. Until the national government takes up the naval reserve question the business and professional men who, combining a patriotic spirit with aquatic tastes, enlist in the naval militia, will be very valuable aids in examining into and keeping informed concerning the seafaring *personnel* of their States. The energy and executive ability of the men that have taken hold of this movement in the West (many of them graduates of the Naval Academy) can be depended upon in case of sudden need to enroll a very desirable set of men, and thus relieve the regular navy of preliminary work which its scarcity of regular officers would otherwise make a very difficult undertaking.

One word more about our seafaring population. Recent investigation by the War College has developed the fact that during the Civil War a large number of men—fishermen and local water men—along the North Atlantic coast did not enlist for service in the regular navy. The long term of enlistment required, coupled with the fact that the sea had no novelty for them, may have blunted their patriotism. An inquiry among their successors confirms the opinion that they would much prefer to be utilized for local defence. Torpedo-boat flotillas, mosquito fleets, coast signal-stations, and submarine mining squads would therefore be able to obtain among this class very valuable recruits, while the cruising navy, especially with its term of enlistment extended, as has frequently been recommended, from three to four years, would not succeed in attracting them.

The foregoing propositions and the conclusions to be drawn from them may be briefly summarized as follows :

1. The Great Lakes region has developed the iron and steel industry to a degree that enables it to surpass all the rest of the United States in the important industry of shipbuilding.

2. The improvements in canal building make it only a question of time when this region will have a deep-water outlet to the sea.

3. The result of this deep-water way will be the rehabilitation of our merchant marine and the creation of an extensive foreign trade carried in American bottoms.

4. The expansion of our merchant marine will be followed necessarily by the expansion of the navy.

5. The Great Lakes region is debarred by existing treaty relations from contributing *material* for naval warfare, but, containing as it does more than one-third of our entire population, the navy should, as a peace precaution, give immediate encouragement to the naval-militia movement in that part of the United States, thus developing a source of supply for the large increase in our *personnel* that war will render necessary.

The names of Perry and Chauncey remind us that Lake Erie and Lake Ontario were once the scene of important naval battles. In the hurried preparations of those days, when officers and men were brought from the seaboard over rough trails to improvise and man flotillas on the Lakes, the frontiersman stood ready with his rifle to aid the sailor. To-day, when the brig has given place to the battleship, and the 32-pounder to the 13-inch gun, the descendants of these frontiersmen may be depended upon to furnish their quota of men that have the handiness of the seaman, the skill of the gunner, and the ingenuity of the artisan. The scene changes to the high seas, but in the ranks of the militia coast defenders will be found the same spirit that animated the volunteers at Put-in-Bay and Sackett's Harbor.

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